

**FACT SHEET FOR NPDES PERMIT
NO. WA-002094-0**

**CITY OF OMAK
PUBLICLY-OWNED TREATMENT WORKS (POTW)**

SUMMARY

The City of Omak is seeking reissuance of its National Pollutant Discharge Elimination System (NPDES) Permit for its Publicly-Owned Treatment Works (POTW). The POTW consists of approximately 24 miles of sewers, 4 lift stations, and a wastewater treatment plant. The treatment plant provides secondary-level treatment utilizing an activated sludge process and ultraviolet (UV) disinfection, and then discharges treated wastewater through a submerged outfall to the Okanogan River. The City's record of compliance is excellent. During the previous permit cycle, from August 1998 to the present, the treatment plant has consistently discharged high-quality effluent.

The treatment plant received a major upgrade during 2000 and 2001. The focus of the upgrade was to improve reliability rather than expand treatment capacity. Mechanical improvements included addition of clarification capacity, installation of the UV disinfection system, improvements to the sludge management system and establishment of an in-vessel composting system at the treatment plant site. However, according to data submitted to the Department by the City, influent BOD and TSS loadings to the treatment plant sometimes exceed the design criteria. At this time the City is preparing a Plan to Maintain Adequate Capacity to assess the situation.

This permit contains a major modification from the previous permit. The modification is driven by the Department of Ecology's (Department's) Total Maximum Daily Load (TMDL) Study to address non-attainment of water quality standards for DDT and PCB in the Okanogan River. As part of the TMDL Study, DDT and PCB were found in the treatment plant sludge. From a regulatory perspective, the presence of DDT and PCB presents a difficult challenge because both of these highly toxic substances have been banned since the 1970s. DDT was used extensively for pest control on the area agricultural lands and forests from the mid-1940s to the early-1970s. In the opinion of the Department, the most desirable solution is to identify the source of these pollutants, then reduce and, if possible, eliminate them from the POTW. For these reasons, in lieu of numerical effluent limits, this permit requires the City to conduct a study to identify, then reduce and, if possible, eliminate DDT and PCB from the POTW.

Note to the reader: All citations of the Chapter 173-201A Washington Administrative Code (WAC) in this fact sheet and the associated permit refer to the 1992 revision.

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), technical criteria for discharges from municipal wastewater treatment facilities (Chapter 173-221 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the State is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	City of Omak
Facility Name and Address	City of Omak Wastewater Treatment Plant 635 Fir Street Omak, WA 98841
Type of Treatment:	Activated Sludge Oxidation Ditch with Ultraviolet (UV) Disinfection
Discharge Location Outfall #001	Okanogan River, River Mile 29.9 Latitude: 48° 24' 02" N Longitude: 119° 32' 01" W
Discharge Location Outfall #002	Okanogan River, River Mile 29.9 Latitude: 48° 24' 02" N Longitude: 119° 32' 01" W (Approximately 25 feet downstream of Outfall #001)
Water Body ID Number	WA-49-1020 (Old) YN58LL (New)

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

The City of Omak (City) is located in north-central Washington and straddles the Okanogan River. The city borders the Colville Indian Reservation to the east. Omak is the largest city in Okanogan County and serves as the commercial center of the region. The wastewater system serves a combination of residential, commercial and industrial users. Industrial use is primarily associated with discharges from the fruit packing industry.

In 1996, the Department approved a Wastewater Treatment Facilities Engineering Report and a Wastewater Treatment Facilities General Sewer Plan submitted by the City. Recommendations contained in the Engineering Report, which addressed deficiencies of the treatment plant, were implemented in an upgrade which occurred during 2000 and 2001. Much of the collection system rehabilitation work was completed by 1998, although the City has an ongoing maintenance program that includes routine inspections and replacement of failing sections of sewer pipe.

History

The City's Wastewater Treatment Plant was originally constructed and placed into operation as a trickling filter secondary treatment facility. In 1977-78, the facility was upgraded, which

included replacement of portions of the existing collection system, sealing of other portions of the collection system, and replacing the trickling filter with an oxidation ditch secondary treatment system. An NPDES permit was first issued on July 1, 1977 and was most recently renewed in April 1999. The present population served by the facility is approximately 4,120.

The most current upgrade, which was completed in 2002, resulted in construction of a third secondary clarifier, installation of a UV disinfection system, a new sludge pumping facility, a new sludge dewatering facility, and an in-vessel sludge composting process.

Collection System Status

The City's sanitary collection system contains approximately 24 miles of sewers. Seventy-six percent of the sewer pipes consist of 8-inch pipe. Although much of the system is gravity fed, four pump stations aid in conveyance of wastewater to the treatment facilities. Raw sewage is delivered by an influent pumping station to the treatment plant by means of three pumps with a peak capacity of 1,500 gallons per minute (gpm), each. In 1978, the collection system was extensively renovated, entailing replacement of some sections and resealing of others.

All four lift stations in the collection system are in very good condition. Three of the lift stations were either constructed or refurbished since 1993, and new pumps were installed in the fourth station in 1990.

An Infiltration and Inflow (I & I) evaluation completed in 1992 determined that increased infiltration into the collection system was a result of an elevated ground water table, which is influenced by the nearby Okanogan River. Infiltration was found to be highest in the late spring and early summer, from late May through July, when the river is carrying spring runoff water. The I & I Report recommended a program to identify and prioritize problem areas within the system, correlate high levels of infiltration with the ground water table and spring runoff, and develop and implement a sewer replacement and maintenance schedule. The City of Omak Wastewater Treatment Facilities General Sewer Plan (GSP), dated May 1996, was developed to guide the City with improving and maintaining the collection system. The GSP serves as a companion document to the engineering report mentioned elsewhere in this fact sheet. See the I&I EVALUATION section of this fact sheet for further discussion of this issue.

In 1998, the City completed replacement of three collection system segments specifically identified in the GSP as high priority projects. In addition to these collection system improvements, and in keeping with a recommendation contained in the GSP, the City instituted a collection system maintenance program. Once per year the City rods or jets every sewer within its collection system. Known problem areas are rodded or jetted twice per year.

The City maintains a separate storm water sewer system which will not be addressed further in this fact sheet or the permit.

Treatment Processes

The facility uses an activated sludge-extended aeration oxidation ditch design which provides secondary treatment for the City. Effluent is continuously discharged to the Okanogan River, while sludge is normally pumped back into the oxidation ditch or to the sludge dewatering and biosolids treatment process. The typical wastewater flow path (although considerable flexibility exists) begins with influent entering the facility at the influent wetwell. The influent is lifted by three 1,500 gpm screw centrifugal influent pumps to the headworks area through a common 12-inch diameter header. At the headworks, influent flows over a depression grit trap, and then through a "Helisieve" mechanical, in-channel, fine screening system. Coarse barscreens are provided in the event it is necessary to bypass the mechanical screen for maintenance or because of high flows. Wastewater then enters the oxidation ditch, in which oxygen is provided and solids kept in suspension (activated sludge) by the action of two brush aeration rotors mounted on the ditch structure. The screw pumps and Helisieve were installed in 1997. During the same period the bearings and shafts on the oxidation ditch rotors were refurbished.

Wastewater from the oxidation ditch then flows by gravity through a flow distribution box to the final clarifiers where solids-liquid separation occurs. Clarifier supernatant (final effluent) flows through weirs and undergoes disinfection with a UV process prior to discharge.

Discharge Outfall

The City's Wastewater Treatment Plant discharges effluent via an eighteen (18) inch diameter outfall pipe, buried approximately three feet below the bottom of the Okanogan River, with an attached diffuser. The diffuser consists of an eighteen foot-long header of ductile iron pipe (18-inch diameter) with seventeen (17) 3-inch diameter standpipes, spaced staggered every twenty-four (24) inches on each side of the header's centerline. The diffusers are buried and extend six (6) inches up from the river bed with their discharge directed downstream by a 90 degree elbow. The diffuser header is situated on the river bottom, perpendicular to river flow.

The outfall is gravity-fed, and increased head may be required when the river is high, thus impeding normal gravity flow. The outfall is centered approximately 30 feet offshore and submerged approximately 5 feet beneath the surface of the Okanogan River.

The Permittee has retained the facility's original outfall as a reserve discharge conveyance. This 18-inch diameter pipe discharges to the river through a flap gate structure located on the river bank. The original outfall was retained because, during high water levels in the river back-pressure will be created on the main outfall and diffuser, and the original outfall can be used as an emergency discharge point. The Department does not object to retention of this structure, provided sampling continuity is assured when it is in use. This permit extends coverage to this reserve outfall; however, no mixing zone is authorized for the discharge from this outfall.

Residual Solids

The treatment facilities remove solids during the treatment of the wastewater at the headworks (grit and screenings), and at the secondary clarifiers, in addition to incidental solids (rags, scum, and other debris) removed as part of the routine maintenance of the equipment. Grit, rags, scum and screenings are drained and disposed of as solid waste at the local landfill.

Solids removed from the treatment process are first dewatered in a newly installed 1.7 meter belt filter press, and then treated in an in-vessel composting system. The finished compost is used in City landscaping projects or sold to the public. There have been some problems with the new composting system, mainly that its capacity is undersized in relation to the City's solids management needs. See the SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT section of this fact sheet for further discussion of this issue.

PERMIT STATUS

The previous permit for this facility was issued on April 23, 1999. The previous permit placed effluent limitations on 5-day Biochemical Oxygen Demand (BOD₅), Total Suspended Solids (TSS), pH, Fecal Coliform bacteria, and Total Residual Chlorine. The previous permit established performance-based interim limits and water quality-based final limitations for Total Residual Chlorine.

An application for permit renewal was received by the Department on April 30, 2003 and accepted by the Department on May 1, 2003.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The most recent compliance inspection without sampling was conducted on May 15, 2003.

During the history of the previous permit, the Permittee has remained in compliance, based on Discharge Monitoring Reports (DMRs) submitted to the Department and inspections conducted by the Department.

Since issuance of the previous permit, the following formal enforcement actions occurred:

Notice of Violation No. DE 00WQCR-1323 was issued on June 28, 2000 to the City in response to the discharge of approximately 600,000 gallons of non-disinfected effluent to the Okanogan River. This discharge occurred as a result of an operator error while activating the backup gas chlorination system.

In response to the incident, treatment plant staff underwent remedial training to operate the chlorination system. Due to the City's remedial actions, and the upgrade underway to replace the

chlorination system with a UV disinfection process, no further action was taken by the Department concerning this incident.

Administrative Order No. 00DEWQCR-1726 was issued on October 27, 2000. This Order granted the City's request for an extension of the interim Total Residual Chlorine effluent limit to accommodate a four month construction delay for installation of the UV system.

Administrative Order No. DE 01WQCR-2040 was issued on February 22, 2001 granting the City's request to discontinue effluent monitoring of Total Residual Chlorine because the newly-constructed UV system was operational.

In the context of informal actions, the Department sent the City a letter dated November 27, 2002 addressing issues of operation and maintenance and permit compliance. The letter was sent after compliance inspections carried out by the Department during which the inspector noted settleability problems in the clarifiers. The letter addressed the following issues:

- Settleability Problems in the Clarifiers: During site visits conducted by the Department on October 30, 2002 and November 6, 2002 the inspector observed bulking and rising sludge in the clarifiers. These symptoms suggest that the sludge system was not effectively removing solids generated by the treatment process.
- BOD Loadings to the Treatment Plant: The letter noted that since the previous permit was issued in 1999, BOD loadings exceeded the 85% criteria [that triggers the requirement for a Plan to Maintain Adequate Capacity] nine of the twelve previous months;
- Non-submittal of a Declaration of Construction Completion and an Operations and Maintenance (O&M) Manual: The letter noted that neither of these documents had been submitted to the Department, as required by the applicable regulations.

The letter required:

- Submittal of a report on the bulking problems;
- Submittal of a Declaration of Construction Completion and an Operations and Maintenance (O&M) Manual;
- Submittal of an Engineering Report evaluating the composting systems actual capacity to remove solids generated by the wastewater treatment plant processes;
- Submittal of a Plan to Maintain Adequate Capacity to address the elevated influent BOD loadings to the treatment plant.

As of August 1, 2003, all four submittals have been received by the Department.

WASTEWATER CHARACTERIZATION

Wastewater influent and effluent are characterized for the period from June 1, 2002 to May 31, 2003 using data submitted to the Department on DMRs.

Influent

Conventional Pollutant Loadings

Monthly influent characterization data are presented Table 1 in comparison to design loadings.

Table 1: Characterization of Influent Loadings

Parameter	One-year Average	Highest Monthly Loading	Percent of Monthly Design Loading	Maximum Monthly Design Loading
BOD ₅ , in lbs/day	1,144	1,480	116	1,275
TSS, in lbs/day	978.5	1,424	103	1,380

Effluent

Conventional Pollutants

Table 2 contains a comparison of average monthly effluent concentrations reported by the City and the applicable effluent limits from the previous permit.

Table 2: Characterization of Effluent

Parameter	One-year Average	Highest Monthly Average	Monthly Permit Limits
BOD ₅ , in mg/L	2.2	3.1	30
TSS, in mg/L	3.4	17	30
Fecal Coliform Bacteria, in #colonies/100 mL	1.1	3.4	200

The quality of effluent discharged from the treatment plant is excellent, even for an oxidation ditch. The treatment process consistently removes from 95% to 99% of influent BOD and TSS concentrations.

Ammonia and Total Residual Chlorine

The previous permit did not contain effluent limits for Ammonia because no reasonable potential to exceed the water quality criteria was demonstrated. The City's discharge typically contained less than 0.5 mg/L of Ammonia during the characterization period, although in August 2002 a concentration of 1.31 mg/L was reported.

Concerning Residual Chlorine, the previous permit established an interim, performance-based maximum daily effluent limit and more stringent final, water quality-based average monthly and maximum daily limits. The final limits never went into effect because the City installed the UV disinfection system.

Priority Pollutants

As part of the Department's Total Maximum Daily Load (TMDL) Study to address exceedances of the DDT and PCB criteria in the Okanogan River, the Permittee's effluent and sludge were sampled for these pollutants in 2001 and 2002. DDT, PCB and their metabolites were not found in two effluent samples, but were present in the sludge sample. The presence of these pollutants at the treatment plant, and their influence on the requirements of this permit, are discussed in the section of this fact sheet titled **Consideration of Surface Water Quality-Based Limits for Numeric Criteria: Toxic Pollutants**.

SEPA COMPLIANCE

The Engineering Report Supplement, dated December 1996, contains a State Environmental Policy Act (SEPA) checklist and a Determination of Non-Significance document.

PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in a NPDES permit must be either technology- or water quality-based. Technology-based limitations for municipal discharges are set by regulation (40 CFR 133, and Chapters 173-220 and 173-221 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992.) The most stringent of these types of limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents in the application were evaluated on a technology- and water quality-basis.

The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent. Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation. Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

DESIGN CRITERIA

In accordance with WAC 173-220-150 (1)(g), flows or waste loadings shall not exceed approved design criteria.

The design criteria for this treatment facility are taken from Sheet G-2 of the approved Plans and Specifications prepared by Huibregtse, Louman Associates, dated March 2, 2000, and are as follows:

Table 3: Design Standards for City of Omak WWTP

Parameter	Design Quantity
Monthly average flow (max. month)	1.89 MGD
BOD ₅ influent loading	1,275 lbs/day
TSS influent loading	1,380 lbs/day
Design population equivalent	6,375

The Department received a draft Engineering Report from the City on August 1, 2003, but at this time this document has not been reviewed. Depending on the contents of this document and the Department's review, the design criteria for this facility may change.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Municipal wastewater treatment plants are a category of discharger for which technology-based effluent limits have been promulgated by Federal and State regulations. These effluent limitations are given in the Code of Federal Regulations (CFR) 40 CFR Part 133 (Federal) and in Chapter 173-221 WAC (State). These regulations are performance standards that constitute all known available and reasonable methods of prevention, control, and treatment for municipal wastewater.

The following technology-based limits for pH, fecal coliform, BOD₅, and TSS are taken from Chapter 173-221 WAC are:

Table 4: Technology-based Limits

Parameter	Limit
pH:	shall be within the range of 6 to 9 standard units.
Fecal Coliform Bacteria	Monthly Geometric Mean = 200 organisms/100 mL Weekly Geometric Mean = 400 organisms/100 mL
BOD ₅ (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L
TSS (concentration)	Average Monthly Limit is the most stringent of the following: - 30 mg/L - may not exceed fifteen percent (15%) of the average influent concentration Average Weekly Limit = 45 mg/L

The following technology-based mass limits are based on WAC 173-220-130(3)(b) and 173-221-030(11)(b).

BOD₅

Monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly influent design loading (1,275 lbs/day) x 0.15 = 191 lbs/day.

The weekly average effluent mass loading is calculated as 1.5 x monthly effluent loading = 286.5 lbs/day.

TSS

Monthly effluent mass loadings (lbs/day) were calculated as the maximum monthly influent design loading (1,380 lbs/day) x 0.15 = 207 lbs/day.

The weekly average effluent mass loading is calculated as 1.5 x monthly effluent loading = 310.5 lbs/day.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be

conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a State regulation designed to protect the beneficial uses of the surface waters of the State. Water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin-wide total maximum daily loading study (TMDL).

Numerical Criteria for the Protection of Aquatic Life

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in a receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

Numerical Criteria for the Protection of Human Health

The State was issued 91 numeric water quality criteria for the protection of human health by the U.S. EPA (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

Narrative Criteria

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

Antidegradation

The State of Washington's Antidegradation Policy requires that discharges into a receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of a receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when receiving waters are of higher quality than the criteria assigned, the existing water quality shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

Critical Conditions

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

Mixing Zones

The Water Quality Standards allow the Department of Ecology to authorize mixing zones around a point of discharge in establishing surface water quality-based effluent limits. Both "acute" and "chronic" mixing zones may be authorized for pollutants that can have a toxic effect on the aquatic environment near the point of discharge. The concentration of pollutants at the boundary of these mixing zones may not exceed the numerical criteria for that type of zone. Mixing zones can only be authorized for discharges that are receiving all known, available, and reasonable methods of prevention, control and treatment (AKART) and in accordance with other mixing zone requirements of WAC 173-201A-100.

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

Description of the Receiving Water

The facility discharges to the Okanogan River, which is designated as a Class A receiving water in the vicinity of the outfall. Other nearby point source outfalls include the City of Okanogan wastewater treatment plant outfall, located approximately four miles downstream. Significant nearby non-point sources of pollutants include storm water runoff from urban areas and nearby agricultural lands. Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall meet or exceed the requirements for all or substantially all uses.

This segment of the river is designated WA-49-1010 using the Department's old Waterbody Identification system and YN58LL using the new system. According to the Department's most recent, approved 303(d) list of impaired waterbodies, this segment of the river is listed for the following parameters: Temperature, Fecal Coliform Bacteria, 4,4' DDD, 4,4' DDE, PCB-1254 and PCB 1260. The listings for Temperature and Fecal Coliform Bacteria are based on exceedances of the water quality criteria in the water column; the listings for DDT, PCB and their metabolites are based on exceedances of the human health criteria found through fish tissue analysis. At this time, TMDL Studies for Temperature and Fecal Coliform Bacteria have not been scheduled. TMDL Studies for DDT, PCB and their metabolites are in progress.

Both DDT and PCB are environmentally pervasive, fat soluble and bioaccumulate in fish tissue. DDT was banned by the US EPA in 1972 for all uses except emergencies. PCBs were banned by US EPA in 1979 due to concerns about human carcinogenicity. PCBs were used as heat transfer fluids, wax and pesticide extenders, plasticizers and several other applications.

The mainstem Okanogan River is 303(d)-listed for DDT and PCBs based on fish bioassays conducted in the mid-1990's. However, the 303(d) DDT listings for three tributaries to the river are based on exceedances of the water quality criteria in the water column.

The Draft TMDL Report addressing DDT and PCB found that tributaries and sewage treatment plants contribute only about 200 mg/day of total DDTs (t-DDT) and 1 mg/day t-PCB to the mainstem Okanogan River, compared to measured DDT loads of 1,500 - 4,300 mg/day and no measurable PCBs on the lower river (Abstract, p.3). The TMDL Report concluded that the Okanogan River continues to be dosed with contaminated Osoyoos Lake sediments which are re-suspended and transported downstream during high flow episodes (p. 48). The source of PCBs is more problematic, and due to the difficulty in detecting them in the water column, no serious efforts were made by the investigators to determine the sources of this contaminant (p. 38). See the Toxic Pollutants section of this fact sheet for further information on the DDT and PCB studies.

Surface Water Quality Criteria

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Table 5: Applicable Water Quality Criteria

Parameter	Criteria
Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	8 mg/L minimum
Temperature	18 degrees (°) Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTUs above background
Toxics	No toxics in toxic amounts

Consideration of Surface Water Quality-Based Limits for Numeric Criteria

Pollutant concentrations in the discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in

accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC.

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants -- their adverse effects diminish rapidly with mixing in a receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs at some distance away from the discharge, even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which a pollutant of concern has its maximum effect.

The derivation of water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the ambient receiving water.

The critical condition for the Okanogan River is the seven-day average low river flow with a recurrence interval of ten years (7Q10). Ambient flow, velocity and streambed dimension data were taken from: an Okanogan Wastewater Treatment Plant Receiving Water Study, dated October 1988. Ambient Temperature and pH data are derived from data taken from the Department's sampling station at Malott, WA, located approximately 13 miles downstream of the City's outfall. Temperature and pH data represent warm weather conditions, from July 1st through September 30th, during the years from 1999 through 2002. These conditions reflect the period at which Temperature is at its peak, the Ammonia criteria is most restrictive and the stream is generally least supportive of aquatic life.

Table 6: Ambient Data Used in Determination of Reasonable Potential

Parameter	Value
7Q10 low flow	336 cfs
Velocity	2.16 ft/sec
Depth	4 feet
Width	50 feet
Temperature (90 th percentile)	23.85° C
pH (90 th percentile)	8.4

The discussion in the next few paragraphs concerning dilution factors is applicable to the City's discharge from its main outfall (#001) only. The City's backup outfall (#002) terminates in a sidebank discharge, which cannot be modeled with the computer modeling software available to the permit writer. For unknown reasons, previous permits did not explicitly authorize discharge from this outfall. However, because outfall #002 is utilized on an emergency basis approximately once or twice every ten years when the river is at flood stage, and in consideration of the high-quality effluent routinely discharged from the City's treatment plant, this permit formally authorizes discharge from this outfall.

The dilution factors developed for the previous permit are retained in this permit. The calculated acute dilution factor is 7.3 and the chronic dilution factor is 64.2. The previous dilution factors are retained in this permit with the following rationale. The low river flow value is based on a 30-year flow record and is unlikely to have changed significantly since 1997. Effluent flows from the treatment plant have actually decreased since the previous permit was developed, probably due to the City's efforts to reduce I&I and less intensive storm events. Reduced effluent flows would result in higher (more generous) acute and chronic dilution factors. However, the City's discharge complies with the water quality standards at end-of-pipe, without the benefit of a mixing zone, with the possible exception of Ammonia and Temperature. Therefore, the dilution factors from the previous permit are retained in this permit.

The 7Q10 flow volume cited in the receiving water study report was used to calculate dilution factors in the previous permit. Dilution factors in this permit are based on the same 7Q10 flow. Flow measurements made by the U. S. Geological Survey from 1966 to 1997 at Malott, WA, which is 12 miles downstream of the Permittee's outfall, revealed a 7Q10 flow of 372 cfs; therefore, a 7Q10 flow of 336 cfs at the outfall appears a reasonable approximation. The standard limits of "25% and 2.5% of the receiving water 7Q10 flow" were used for calculating the chronic and acute dilution factors, respectively. The ambient flow of the Okanogan River available for chronic and acute dilution were estimated to be 84.0 and 8.4 cubic feet per second (cfs), respectively.

The dilution factors of effluent to receiving water that occur within these zones have been determined at critical conditions by the use of simple mixing analysis. The dilution factors used to determine effluent limits were calculated using the following formula

$$DF = (Q_{amb} + Q_{eff})/Q_{eff}$$

where, DF is the dilution factor

Q_{amb} is the flow volume of the receiving water

Q_{eff} is the effluent flow volume

7Q10 flow = 336 cfs

Chronic Dilution Factor

Receiving water flow (Q_{amb}) = 25% of 336 cfs = 84 cfs

Effluent flow (Q_{eff}) = 0.8587 MGD = 1.33 cfs

$DF = (84 \text{ cfs} + 1.33 \text{ cfs})/1.33 \text{ cfs} = 64.2$

Acute Dilution Factor

Receiving water flow (Q_{amb}) = 2.5% of 336 cfs = 8.4 cfs

Effluent flow (Q_{eff}) = 0.8587 MGD = 1.33 cfs

DF = (8.4 cfs + 1.33 cfs)/1.33 cfs = 7.3

The dilution factors were determined to be:

Table 7: Dilution Factors

	Acute Dilution Factor	Chronic Dilution Factor
Aquatic Life	7.3	64.2

The impacts of Ammonia, pH, Temperature and Fecal Coliform Bacteria were determined as shown below using the dilution factors at critical conditions described above.

BOD₅--The Permittee's facility consistently discharges high quality effluent that results in a small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. In the best professional judgment of the Department, technology-based limitations will be protective of dissolved oxygen criteria in the receiving water.

Temperature--The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at critical condition. The receiving water temperature at the critical condition is 23.85 °C (90th percentile, July through September, 1999 through 2002) and the effluent temperature is 21.26 °C (95th percentile, June 2002 through May 2003). The chronic dilution factor is 64.2. The predicted resultant temperature at the boundary of the chronic mixing zone is 23.81°C, and the decremental decrease is 0.04 °C.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters. Therefore, no effluent limitation for temperature was placed in this permit.

pH--During the effluent characterization period (June 2002 through May 2003), the minimum was 7.45 and the maximum reported pH was 7.92. These values comply with the water quality criteria of 6.5 to 8.5 without the benefit of dilution. Therefore, under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters and the technology-based effluent limitations for pH were placed in the permit.

Fecal coliform--Compliance with the Fecal Coliform Bacteria water quality criteria was modeled by simple mixing analysis using the technology-based limit of 200 organisms/100 mL and a dilution factor of 64.2. The highest geometric mean concentration reported to the Department

during the characterization was 3.4 organisms/100 mL. Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters and the technology-based effluent limitation for Fecal Coliform Bacteria was placed in this permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

The following toxics were determined to be present in the discharge: Ammonia; DDT, PCB and their metabolites. A reasonable potential analysis (See Appendix C) was conducted on Ammonia to determine whether or not effluent limitations would be required in this permit.

Ammonia

The determination of the reasonable potential for Ammonia to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (Appendix C) at the critical condition. The critical condition in this case occurs during the warm weather months (July through September) when Ammonia is most toxic. The parameters used to determine the Ammonia criteria, and the resulting criteria, are contained in Table 7 and the Department's standard spreadsheet. The resulting criteria were:

Table 8: Ammonia Criteria

Acute Criterion	Chronic Criterion
1.8 mg/L	0.30 mg/L

After calculating the Ammonia water quality criteria, a reasonable potential analysis was conducted on the Department's standard spreadsheet to determine the likelihood of the discharge to exceed the criteria. The reasonable potential analysis was very conservative in that the highest single reported effluent Ammonia concentration of 1.31 mg/L was used, rather than the 90th percentile value of approximately 0.91 mg/L. The analysis showed no reasonable potential; therefore, this permit does not contain an Ammonia effluent limit.

DDT, PCB and their Metabolites

Neither DDT nor its metabolites were detected in the City's effluent in 2 samples taken in April and May of 2001. In addition, neither PCB nor its metabolites were detected in the effluent samples. However, DDT, PCB and their metabolites were found in the treatment plant sludge. Of the three treatment plants that were sampled as part of the study, the Omak treatment plant sludge had the lowest concentrations.

Since PCBs were difficult to detect in water, investigators estimated daily loads of PCBs discharged from the facility based on the concentrations of suspended solids in the effluent. They assumed the suspended solids in the effluent were composed primarily of sludge (TMDL Draft Report, pp. 34-35), and concentrations of pollutants in the effluent solids matched those found in the sampled sludge.

Estimated DDT and PCB daily loads discharged from the Omak treatment plant to the Okanogan River, based on effluent samples (DDT) and sludge samples (PCBs) are presented in Table 9.

Table 9: Estimated Daily Loads of DDT and PCB from the Omak STP

4,4'-DDE, in mg/day	4,4'-DDD, in mg/day	4,4'-DDT, in mg/day	t-DDT, in mg/day	t-PCB^a, in mg/day
0.0	0.0	0.0	0.0	1.3

a-Results shown are for PCB Aroclors 1260, 1254, 1248, 1242, 1232, 1221 and 1016.

The daily loads of DDT are indicated as 0.0 in the table because these values were calculated based on concentrations present in the sludge. Since concentrations were relatively low in the sludge and not detected in the effluent, the calculated daily loads were too minute to quantify.

In the best professional judgment of the Department, establishment of effluent limits for DDT, PCB and their metabolites are not appropriate at this time, for several reasons. First, the TMDL Report is still in draft form. The issuance date for the final report has not been determined and it must be reviewed and approved by US EPA. Second, its difficult to establish effluent limits based on the two effluent samples that have been taken up until this time, because it is not known whether these sample results are representative of long-term trends. The Department generally considers six to eight samples to be the minimum for statistical validity. Third, DDT has been largely banned in this country since 1972 and PCB since 1979, and the Department feels it is not appropriate to establish effluent limits for these illegal substances. The Department feels the most desirable outcome for this situation is to determine how these substances are entering the collection system, reducing and, if possible, eliminating them from the POTW. Therefore, this permit establishes a Schedule of Compliance to address this problem. The Schedule of Compliance is described and discussed later in its own section of this fact sheet.

Whole Effluent Toxicity

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing.

In accordance with WAC 173-205-040, the Permittee's effluent may contain the toxic chemicals DDT, PCB and their metabolites, based on estimates made using concentrations found in limited sludge sampling. This permit would ordinarily contain requirements for whole effluent toxicity testing as authorized by RCW 90.48.520 and 40 CFR 122.44 and in accordance with procedures in Chapter 173-205 WAC. However, the Permittee is improving pollution control in order to meet other regulatory requirements. The results of an effluent characterization for toxicity would not be accurate until after the improvements have been completed.

WAC 173-205-030(4) allows the Department to delay effluent characterization for WET for existing facilities that are under a compliance schedule in a permit to implement technology-based controls or to achieve compliance with surface water quality-based effluent limits.

The study to determine the source(s) of DDT and PCB, reducing and, if possible eliminating them from the POTW is expected to take the entire upcoming permit cycle; therefore, the need for WET Testing will be reevaluated at the next permit renewal.

Human Health

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the State by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

The Department has determined that the effluent may contain chemicals of concern for human health, based on estimates made using concentrations found in limited sludge sampling. The discharger's high priority status is based on knowledge that the applicant discharges to a waterbody that is 303(d) listed for regulated chemicals, and that the chemicals are present in the effluent. The chemicals of concern are DDT, PCB and their metabolites.

Special Condition S8 of this permit is a Schedule of Compliance, which requires the City to conduct a study to determine the source(s) of DDT and PCB, and a plan for their reduction and, if possible elimination from the POTW. The study is expected to take the entire upcoming permit cycle; therefore, the potential human health impacts of the City's discharge will be reevaluated at the next permit renewal.

Sediment Quality

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

The Department has been unable to determine at this time the potential for this discharge to cause a violation of sediment quality standards. If the Department determines in the future that

there is a potential for violation of the Sediment Quality Standards, an order will be issued to require the Permittee to demonstrate that either the point of discharge is not an area of deposition or, if the point of discharge is a depositional area, that there is not an accumulation of toxics in the sediments.

SCHEDULE OF COMPLIANCE

As has been stated earlier in this fact sheet, low concentrations of DDT, PCB and their metabolites have been found in the treatment plant sludge as a result of limited sampling undertaken as part of the TMDL Study. The Department has determined that it would be inappropriate at this time to establish numerical effluent limits for these pollutants. See the section of this fact sheet **Consideration of Surface Water Quality-Based Limits for Numeric Criteria, DDT, PCB and their Metabolites** for the discussion of this determination.

The Schedule of Compliance requires the completion of a study to determine the source of DDT, PCB and their metabolites that have been found in the treatment plant's sludge. The goals of the study are to identify the source of the pollutants, their entry point into the POTW, and to develop measures to reduce and, if possible eliminate these substances from the POTW.

The Schedule of Compliance is intended to be fulfilled by the end of this permit cycle. The City is required to submit a Scope of Work, which describes the strategy and methodology of the study, followed by twice-per-year progress reports. The final report of the study is due with the next application for permit renewal.

GROUND WATER QUALITY LIMITATIONS

The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

This Permittee has no discharge to ground; therefore, no limitations are required based on potential effects to ground water.

COMPARISON OF EFFLUENT LIMITS WITH THE PREVIOUS PERMIT

The previous permit contained interim and final effluent limits. The interim limits contained a performance-based Residual Chlorine limit, and the final limits established more stringent water quality-based limits. The final limits never became effective because the City installed a UV disinfection system, which does not utilize chlorine.

The BOD₅ mass loading limits increased slightly due to an incremental increase in the BOD design loading resulting from the recent upgrade. The mass loading limits are based on 85% removal. Using the alternative method of calculating the monthly mass loading limit,

Concentration (30 mg/L) X Flow (1.89 MGD) X Conversion Factor (8.34), the resulting limit would have been 473 lbs/day.

Table 10: Comparison of Existing Limits with Proposed Limits

Parameter	Existing Permit Limits		Proposed Permit Limits	
	Monthly Average	Weekly Average	Monthly Average	Weekly Average
BOD ₅	30 mg/L 85% removal 180.0 lbs/day	45 mg/L 270.0 lbs/day	30 mg/L 85% removal 191.0 lbs/day	45 mg/L 286.5 lbs/day
TSS	30 mg/L 85% removal 207.0 lbs/day	45 mg/L 310.5 lbs/day	30 mg/L 85% removal 207.0 lbs/day	45 mg/L 310.5 lbs/day
Fecal Coliform	200/100 mL	400/100 mL	200/100 mL	400/100 mL
pH	6 to 9 standard units		6 to 9 standard units	
Parameter	Daily Maximum		Daily Maximum	
Chlorine	0.24 mg/L		Not Applicable	

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Special Condition S2. Specified monitoring frequencies take into account the quantity and variability of discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring. The required monitoring frequency is generally less than the recommended frequencies given in the current version of Ecology's *Permit Writer's Manual* (July 1994) for an oxidation ditch treatment system. These reduced frequencies are in recognition of the City's outstanding record of compliance with the effluent limits in the previous permit.

Revisions in the monitoring program from the previous permit include an increase in influent BOD and TSS monitoring, and removal of the requirement to test for Residual Chlorine. The previous permit required once per week testing for influent BOD and TSS; however, this permit requires twice per week monitoring due to influent loadings to the treatment plant that are close

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to, and sometimes exceed, the design loadings. The Residual Chlorine testing has been removed because the City does not utilize Chlorine in its treatment process anymore.

This permit requires the City to undertake a study to identify the sources of DDT and PCB, reduce and, if possible, eliminate them from the POTW. This permit does not specify a monitoring program for this effort. Rather, the City is required to propose a monitoring program as part of the study's scope of work, to be submitted early in the permit cycle.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories*. The laboratory at this facility is accredited for Ammonia, BOD, DO, pH, TSS and Fecal Coliforms.

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The provisions of Special Condition S3. are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

PREVENTION OF FACILITY OVERLOADING

Overloading of the treatment plant is a violation of the terms and conditions of the permit. To prevent this from occurring, RCW 90.48.110 and WAC 173-220-150 require the Permittee to take the actions detailed in Special Condition S4. to plan expansions or modifications before existing capacity is reached, and to report and correct conditions that could result in new or increased discharges of pollutants.

ENGINEERING REPORT

At this time, the City is developing an Engineering Report to address apparent organic overloading of the treatment plant and the apparent under capacity of the in-vessel composting system to handle solids generated by the treatment process. The background of this issue was discussed earlier in this fact sheet in the section titled **SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT**. Special Condition S4.B of this permit formalizes the requirement for the Engineering Report that the Department informally requested in its letter to the City dated November 27, 2002.

The Department received a draft Engineering Report on August 1, 2003. At this time (August 2003), the Department has not completed review of the document. Therefore, this permit requires submittal of a final Engineering Report by April 15, 2004. In the event the draft Engineering Report is approved by the Department before this permit is issued, this submittal requirement will be considered fulfilled and will be removed from the permit.

I&I EVALUATION

The City has conducted I&I Evaluations in 1972, 1992, 1997 and 2003. The City submitted its most recent I&I Evaluation of its collection system to the Department in April 2003. This analysis was prepared by the City's engineering consultants, Huibregtse, Louman Associates. The analysis confirms previous studies in that it attributes most I&I to seasonal (spring) high river flows: As river levels increase, so does the ground water levels, and resulting infiltration. Base infiltration rates, which are determined in winter months when river flows are typically lowest, were found to be unchanged from the 1992 study.

In comparing infiltration flows from 1984 through 1991 and 1992 through 2001, the study concluded: there has been no increase in per capita winter flows, average annual per capita flows have increased 6%, and May-June average per capita flows have increased 33%. These increases do not account for the newer commercial development in the northeast area of the City contributing to the wastewater flow during the 1992 through 2001 period.

Special Condition S4.E requires the City to submit an I&I Evaluation at approximately the middle of the permit cycle to provide an I&I update in support of the next permit.

WASTELOAD ASSESSMENT

As was discussed earlier in this fact sheet (See SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT and WASTEWATER CHARACTERIZATION), organic loadings to the treatment plant often exceed the 85% planning threshold that triggers the requirement for a PMAC. Occasionally, reported influent loadings exceed design loadings. The two Wasteload Assessments required by this permit are to be submitted in approximately the middle and end of the permit cycle to document the City's progress in addressing plant overloading.

OPERATION AND MAINTENANCE (O&M)

This permit contains Special Condition S5. as authorized under RCW 90.48.110, WAC 173-220-150, Chapter 173-230 WAC, and WAC 173-240-080. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

RESIDUAL SOLIDS HANDLING

To prevent water quality problems the Permittee is required in Special Condition S7. to store and handle all residual solids (grit, screenings, scum, sludge, and other solid waste) in accordance with the requirements of RCW 90.48.080 and State Water Quality Standards.

The final use and disposal of sewage sludge from this facility is regulated by U.S. EPA under 40 CFR 503, and by Ecology under Chapter 70.95J RCW and Chapter 173-308 WAC. The disposal of other solid waste is under the jurisdiction of the Okanogan County Health Department.

PRETREATMENT

Federal and State Pretreatment Program Requirements

Under the terms of the addendum to the "Memorandum of Understanding between Washington Department of Ecology and the United States Environmental Protection Agency, Region 10" (1986), the Department of Ecology (Department) has been delegated authority to administer the Pretreatment Program (i.e. act as the Approval Authority for oversight of delegated Publicly Owned Treatment Works (POTWs)). Under this delegation of authority, the Department has exercised the option of issuing wastewater discharge permits for significant industrial users discharging to POTWs which have not been delegated authority to issue wastewater discharge permits.

The Department is responsible for issuing State Waste Discharge Permits to SIUs and other industrial users of the Permittee's sewer system. Industrial dischargers must obtain these permits from the Department prior to the Permittee accepting the discharge (WAC 173-216-110(5)) (Industries discharging wastewater that is similar in character to domestic wastewater are not required to obtain a permit. Such dischargers should contact the Department to determine if a permit is required.). Industrial dischargers need to apply for a State Waste Discharge Permit sixty days prior to commencing discharge. The conditions contained in the permits will include any applicable conditions for categorical discharges, loading limitations included in contracts with the POTW, and other conditions necessary to assure compliance with State water quality standards and biosolids standards.

The Department requires this POTW to fulfill some of the functions required for the Pretreatment Program in the NPDES permit (e.g. tracking the number and general nature of industrial dischargers to the sewage system). The POTW's NPDES permit will require that all SIUs currently discharging to the POTW be identified and notified of the requirement to apply for a wastewater discharge permit from the Department. None of the obligations imposed on the POTW relieve an industrial or commercial discharger of its primary responsibility for obtaining a wastewater discharge permit (if required), including submittal of engineering reports prior to construction or modification of facilities (40 CFR 403.12(j) and WAC 173-216-070 and WAC 173-240-110, et seq.).

Wastewater Permit Required

RCW 90.48 and WAC 173-216-040 require SIUs to obtain a permit prior to discharge of industrial waste to the Permittee's sewerage system. This provision prohibits the POTW from accepting industrial wastewater from any such dischargers without authorization from the Department.

Requirements for Routine Identification and Reporting of Industrial Users

The NPDES permit requires non-delegated POTWs to "take continuous, routine measures to identify all existing, new, and proposed SIUs and potential significant industrial users (PSIUs) discharging to the Permittee's sewerage system". Examples of such routine measures include regular review of business tax licenses for existing businesses and review of water billing records and existing connection authorization records. System maintenance personnel can also be diligent during performance of their jobs in identifying and reporting as-yet unidentified industrial dischargers. Local newspapers, telephone directories, and word-of-mouth can also be important sources of information regarding new or existing discharges. The POTW is required to notify an industrial discharger, in writing, of their responsibilities regarding application for a State waste discharge permit and to send a copy of the written notification to the Department. The Department will then take steps to solicit a State waste discharge permit application.

Duty to Enforce Discharge Prohibitions

This provision prohibits the POTW from authorizing or permitting an industrial discharger to discharge certain types of waste into the sanitary sewer. The first portion of the provision prohibits acceptance of pollutants which cause pass through or interference. The definitions of pass through and interference are in Appendix B of the fact sheet.

The second portion of this provision prohibits the POTW from accepting certain specific types of wastes, namely those which are explosive, flammable, excessively acidic, basic, otherwise corrosive, or obstructive to the system. In addition, wastes with excessive BOD, petroleum based oils, or which result in toxic gases are prohibited to be discharged. The regulatory basis for these prohibitions is 40 CFR Part 403, with the exception of the pH provisions which are based on WAC 173-216-060.

The third portion of this provision prohibits certain types of discharges unless the POTW receives prior authorization from the Department. The discharges include cooling water in significant volumes, stormwater and other direct inflow sources, and wastewaters significantly affecting system hydraulic loading, which do not require treatment.

OUTFALL EVALUATION

Special Condition S.9 requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to determine if sediment is accumulating in the vicinity of the outfall.

A report sent to the Department after an inspection conducted in 1998 confirmed that the diffusers were cleaned, the height of the diffusers was verified, and the outfall was functional. The Department feels the evaluation required in this permit is warranted to verify the continued functionality of the outfall.

GENERAL CONDITIONS

General Conditions are based directly on State and Federal law and regulations and have been standardized for all individual municipal NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards, Sediment Quality Standards, or Ground Water Standards, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended State or Federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this permit be issued for five (5) years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C. Metcalf and Eddy.

1991. Wastewater Engineering, Treatment, Disposal, and Reuse. Third Edition. Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

Laws and Regulations(<http://www.ecy.wa.gov/laws-rules/index.html>)

Permit and Wastewater Related Information
(<http://www.ecy.wa.gov/programs/wq/wastewater/index.html>)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Water Pollution Control Federation.

1976. Chlorination of Wastewater.

APPENDIX A -- PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on July 16, 2003 in the Wenatchee World to inform the public that an application had been submitted and to invite comment on the reissuance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on September 10, 2003 in the Omak-Okanogan County Chronicle to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology
Central Regional Office
15 West Yakima Avenue, Suite 200
Yakima, WA 98902

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and the reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-220-090). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing (WAC 173-220-100).

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, 509/457-7105, or by writing to the address listed above.

This permit and fact sheet were written by Jim LaSpina.

APPENDIX B -- GLOSSARY

Acute Toxicity--The lethal effect of a pollutant on an organism that occurs within a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of prevention, control, and treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month (except in the case of fecal coliform). The daily discharge is calculated as the average measurement of the pollutant over the day.

Average Weekly Discharge Limitation -- The highest allowable average of daily discharges over a calendar week, calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week. The daily discharge is calculated as the average measurement of the pollutant over the day.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD₅--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD₅ is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the Federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

CBOD₅ -- The quantity of oxygen utilized by a mixed population of microorganisms acting on the nutrients in the sample in an aerobic oxidation for five days at a controlled temperature of 20 degrees Celsius, with an inhibitory agent added to prevent the oxidation of nitrogen compounds. The method for determining CBOD₅ is given in 40 CFR Part 136.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a pollutant on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Combined Sewer Overflow (CSO)--The event during which excess combined sewage flow caused by inflow is discharged from a combined sewer, rather than conveyed to the sewage treatment plant because either the capacity of the treatment plant or the combined sewer is exceeded.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing a minimum of four discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring --Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial User-- A discharger of wastewater to the sanitary sewer which is not sanitary wastewater or is not equivalent to sanitary wastewater in character.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Infiltration and Inflow (I/I)--"Infiltration" means the addition of ground water into a sewer through joints, the sewer pipe material, cracks, and other defects. "Inflow" means the addition of precipitation-caused drainage from roof drains, yard drains, basement drains, street catch basins, etc., into a sewer.

Interference -- A discharge which, alone or in conjunction with a discharge or discharges from other sources, both:

Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use or disposal and;

Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act (SWDA) (including title II, more commonly referred to as the Resource Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), sludge regulations appearing in 40 CFR Part 507, the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--A volume that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in State regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

Pass through -- A discharge which exits the POTW into waters of the State in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation), or which is a cause of a violation of State water quality standards.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Potential Significant Industrial User--A potential significant industrial user is defined as an Industrial User which does not meet the criteria for a Significant Industrial User, but which discharges wastewater meeting one or more of the following criteria:

- a. Exceeds 0.5 % of treatment plant design capacity criteria and discharges <25,000 gallons per day or;
- b. Is a member of a group of similar industrial users which, taken together, have the potential to cause pass through or interference at the POTW (e.g. facilities which develop photographic film or paper, and car washes).

The Department may determine that a discharger initially classified as a potential significant industrial user should be managed as a significant industrial user.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).
Significant Industrial User (SIU)--

- 1) All industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N and;
- 2) Any other industrial user that: discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blow-down wastewater); contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority* on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement (in accordance with 40 CFR 403.8(f)(6)).

Upon finding that the industrial user meeting the criteria in paragraph 2, above, has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the Control Authority* may at any time, on its own initiative or in response to a petition received from an industrial user or POTW, and in accordance with 40 CFR 403.8(f)(6), determine that such industrial user is not a significant industrial user.

*The term "Control Authority" refers to the Washington State Department of Ecology in the case of non-delegated POTWs or to the POTW in the case of delegated POTWs.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, wetlands, and all other surface waters and watercourses within the jurisdiction of the State of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids are the particulate materials in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration or mass of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C -- TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at <http://www.ecy.wa.gov/programs/wq/wastewater/index.html>

CALCULATION OF AMMONIA WATER QUALITY CRITERIA

Based on EPA Quality Criteria for Water (EPA 400/5-86-001) and WAC 173-201A. Revised 1-5-94 (corrected total ammonia criterion). Revised 3/10/95 to calculate chronic criteria in accordance with EPA Memorandum from Heber to WQ Stds Coordinators dated July 30, 1992.

INPUT

1. Ambient Temperature (deg C; 0<T<30)	23.9
2. Ambient pH (6.5<pH<9.0)	8.40
3. Acute TCAP (Salmonids present- 20; absent- 25)	20
4. Chronic TCAP (Salmonids present- 15; absent- 20)	15

OUTPUT

1. Intermediate Calculations:	
Acute FT	1.00
Chronic FT	1.41
FPH	1.00
RATIO	14
pKa	9.28
Fraction Of Total Ammonia Present As Un-ionized	11.6405%
2. Un-ionized Ammonia Criteria	
Acute (1-hour) Un-ionized Ammonia Criterion (ug NH3/L)	260.0
Chronic (4-day) Un-ionized Ammonia Criterion (ug NH3/L)	42.0
3. Total Ammonia Criteria:	
Acute Total Ammonia Criterion (mg NH3+ NH4/L)	2.2
Chronic Total Ammonia Criterion (mg NH3+ NH4/L)	0.4
4. Total Ammonia Criteria expressed as Nitrogen:	
Acute Ammonia Criterion as mg N	1.8
Chronic Ammonia Criterion as N	0.30

REASONABLE POTENTIAL CALCULATION

This spreadsheet calculates the reasonable potential to exceed state water quality standards for a small number of samples. The procedure and calculations are done per the procedure in Technical Support Document for Water Quality-based Toxics Control, U.S. EPA, March, 1991.

Parameter	State Water Quality Standard		Max concentration at edge of...			LIMIT REQ'D?	Effluent percentile value		Max effluent conc. measured (metals as total recoverable)	Coeff Variation	s	# of samples	Multiplier	Acute Dil'n Factor	Chronic Dil'n Factor
	Acute ug/L	Chronic ug/L	Acute Mixing Zone ug/L	Chronic Mixing Zone ug/L	Pn										
Ammonia	1800	300	198.85	22.61	NO	0.95	0.928	1310	0.60	0.55	40	1.11	7.3	64.2	

APPENDIX D -- RESPONSE TO COMMENTS

No comments were received by the Department of Ecology.